

Two new soil-dwelling psocids (Psocoptera: Trogiidae and Pachytroctidae) from the islands of St Helena and Madagascar

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Two new soil-dwelling psocids (Psocoptera: Trogiidae and Pachytroctidae) from the islands of St Helena and Madagascar. - Two new apterous species of Psocoptera (Insecta) are described and illustrated, each belonging to a new genus: *Helenatropos abrupta* gen. n., sp. n. (female) (Trogiidae) from a semidesertic biotope on the mid-Atlantic island of St Helena, and *Thoracotroctes spinifer* gen. n., sp. n. (male) (Pachytroctidae) from the endemic Didiereaceae vegetation in southern Madagascar. The systematic positions of the new genera within their families are discussed and a new subfamily is defined for *Thoracotroctes* gen. n.: Thoracotroctinae subfam. n. A key to the subfamilies of Pachytroctidae is provided.

Keywords: Insecta - Psocodea - Trogiomorpha - Troctomorpha - new subfamily - new genus - new species - soil fauna - thoracic morphology.

INTRODUCTION

The two new Psocoptera species described in the following were collected during studies on the soil and litter fauna of the Afrotropical islands of St Helena (Atlantic Ocean) and Madagascar (Indian Ocean). Pitfall-traps were used in the former study, Berlese-funnel extraction of soil samples in the latter. Both species are completely apterous and heavily sclerotized, probably in adaptation to hemiedaphic life, and each of them is characterized by striking autapomorphies. On the basis of their unique morphological characters these species are assigned to two new genera of the families Trogiidae (suborder Trogiomorpha) and Pachytroctidae (suborder Troctomorpha). The new trogiid genus *Helenatropos* gen. n. is characterized by the sharp-edged hind margin of its vertex and by the medially subdivided prominent metanotum; the shiny, blackish brown animal is somewhat beetle-like in habitus. The most striking autapomorphies of the new pachytroctid genus *Thoracotroctes* gen. n. are the strongly reduced compound eyes (each with 2 ommatidia), the heavily developed spiny cuticular sculpture and, above all, the very particular structure of its thoracic nota. The presence of a weakly sclerotized but well-differentiated mesothoracic intertergite between the pronotum and the main part of the mesonotum in the latter genus is unique in Psocoptera. This particular thoracic morphology is interpreted as a convergence with the Thysanoptera, where the anterior part of the mesonotum always forms an inter-

tergite (sensu Mickoleit, 1961) that is separated from its main part by a membranous zone. This unique combination of characters in *Thoracotroctes* justifies the introduction of a new subfamily in the Pachytroctidae: Thoracotroctinae subfam. n.

The following abbreviations are used in the descriptions: BL = body length; F = length of hind femur; P2, P4 = second (resp. fourth) segment of maxillary palpus; T = length of hind tibia; t1, t2, t3 = length of hind tarsomeres (from condyle to condyle). Other abbreviations are explained in the legend to Figs 21-23.

The material examined has been deposited in the following institutions: MHNG = Muséum d'histoire naturelle, Genève (Switzerland); BMNH = The Natural History Museum, London (UK) [British Museum (Natural History)].

TAXONOMIC TREATMENT

TROGIIDAE

Helenatropos gen. n.

Type species. Helenatropos abrupta sp. n.

Etymology. The genus name is a compound noun referring to St Helena island and to the genus name *Atropos* Leach. In the Greek mythology Atropos is one of the three Fates, the antique goddesses of destiny. In analogy to *Atropos* the new name is feminine in gender.

Description. Completely apterous, body heavily sclerotized (Fig. 1), somewhat beetle-like in habitus (especially with body in contracted condition). Compound eyes well-developed, hemispherical (Fig. 1). Ocelli absent. Head capsule heavily sclerotized, hind margin of vertex sharp-edged, occipital part of head capsule concave and relatively long (covering pronotum and mesonotum in contracted condition of the body). Vertical suture well-developed, frontal suture not visible. Labrum with marginal sensilla as usual in Trogiidae: 5 internal placoid sensilla, each with a small sense cone (Fig. 5). P4 distinctly hatchet-shaped, with a forked sensillum on outer side; P2 with a small spur-sensillum on inner side (Fig. 4). Lacinial apex parallel-sided, with two shallow tines (Fig. 3). Antenna with more than 20 relatively short articles (Fig. 1). All tibiae with short uniform pilosity, lacking the external macrosetae usually present in Trogiidae (e. g., Badonnel, 1976: fig. 141; Lienhard, 1998: fig. 21d). Pearman's organ of hind coxa not differentiated, tarsi 3-segmented, pretarsal claws lacking preapical tooth but with a long basal appendix and an enlarged membranous pulvillus (Fig. 2). Pronotum and mesonotum nearly of same width, metanotum distinctly wider in dorsal view, heavily sclerotized, laterally and posteriorly prominent, separated from the first abdominal tergite by a well-developed membranous zone (this zone completely hidden by the posteriorly prominent metanotum in contracted condition of the body). Metanotum medially subdivided into two winglet-like lobes (Fig. 1), each lobe bearing some stout setae near its margin (Fig. 6). Abdominal tergites fused, forming a sclerotized dorsal shield, but segment borders clearly recognizable except on apex (Fig. 1). Abdominal sternites also heavily sclerotized and fused, forming a ventral shield. Sternite 8 lacking a "ticking-knob" as known in the genus *Trogium* (cf. Lienhard, 1998: fig. 26m). Subgenital plate not differentiated. Epiproct simple, paraproct with a well-

developed anal spine (Fig. 8). External valvula of the gonapophyses relatively broad and heavily sclerotized, bearing numerous long hairs; at its base a well-developed rudiment of the dorsal valvula (Fig. 7). Hairless basal part of gonapophyses separated from the distal part by a transverse ridge (Fig. 7). The ridge prolonged onto clunium, reaching the marginal intersegmental zone between the last two tergites (Fig. 10). Spermatheca typical for the family; duct relatively long, narrow and not curled; membranous wall of sac with numerous pores bearing some very fine denticles on border (Fig. 12b), in some pores a small vesicle visible on outer side (Fig. 12a); two equally developed, almost circular glandular plaques present, these integrated into wall of spermathecal sac, bearing numerous pores in their peripheral zone and a group of inward-directed papillae in their central zone (Fig. 11); spermatophore (sperm packet found inside the spermatheca) entirely hyaline, with a nearly circular vesicle and a long wound tail. Spermapore situated on a weakly sclerotized, elongated, asymmetrical plate (Fig. 9). Male not known.

Discussion. See discussion of the type species.

***Helenatropos abrupta* sp. n.**

Figs 1-12

Type material. Holotype ♀ (MHNG, slide n° 7651). ST HELENA ISLAND: Horse Point Plain (GPS 15 56.013 S, 05 39.654 W), alt. 400 m, plain with creeper plants on the main plateau of Horse Point, September to December 2003 (in pitfall-trap), leg. P. & M. Ashmole [sample 462V(HPP10)].

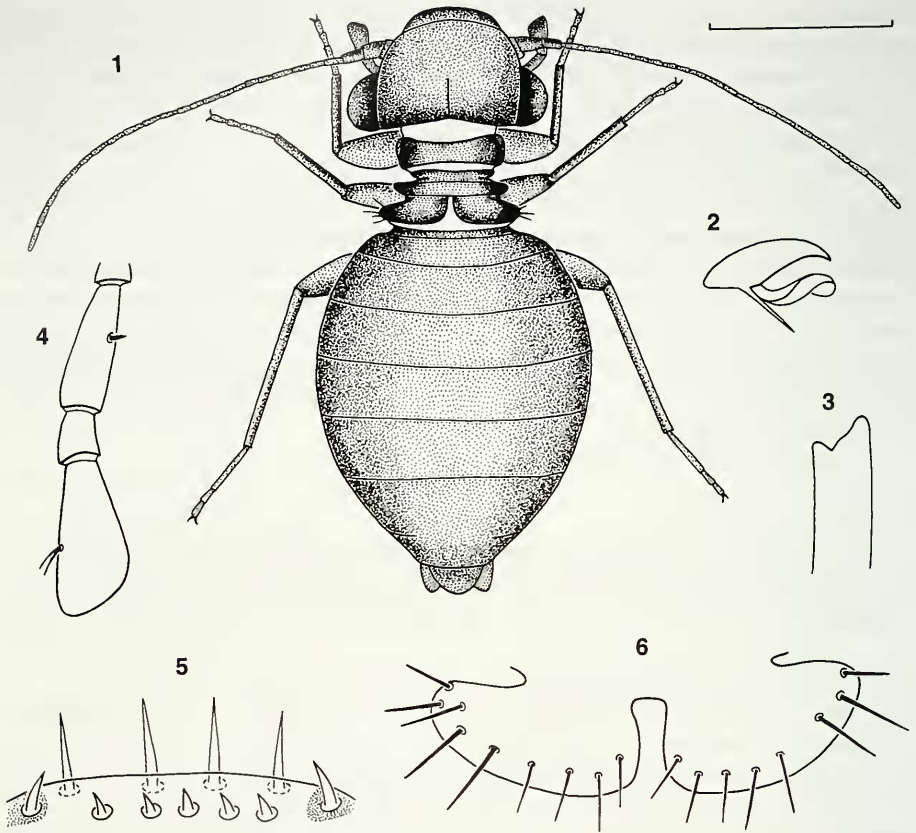
Paratypes: 1 ♀ (MHNG), same data as for the holotype. 1 ♀ (BMNH), same data as for the holotype, but sample 826V(HPP10).

Etymology. The Latin adjective “abruptus, -a, -um” refers to the sharp-edged hind margin of the vertex of this species.

Description. See generic description, with the following additions. Body dark brown to blackish brown (cuticular coloration), shiny (paratype from sample 826V teneral, distinctly paler than the specimens from sample 462V). Dorsal side of body glossy, without distinct cuticular sculpture (only inner surface of cuticle very finely granular when examined at high magnifications). General pilosity relatively short and sparse; some longer setae present on head, on femora and in a transversal row near hind margin of second abdominal tergite, one such seta also laterally on third abdominal tergite near hind margin; some particularly stout setae laterally on metathorax (Fig. 6); compound eye with 2 setae in dorsal half. Antennae of holotype with 22/24 articles (both antennae intact). All tibiae with only 2 apical spurs, lacking other spurs or stout setae on inner side.

Measurements (μm , holotype ♀). BL = 1650 (in alcohol); F = 330; T = 450; t1 = 145; t2 = 50; t3 = 55.

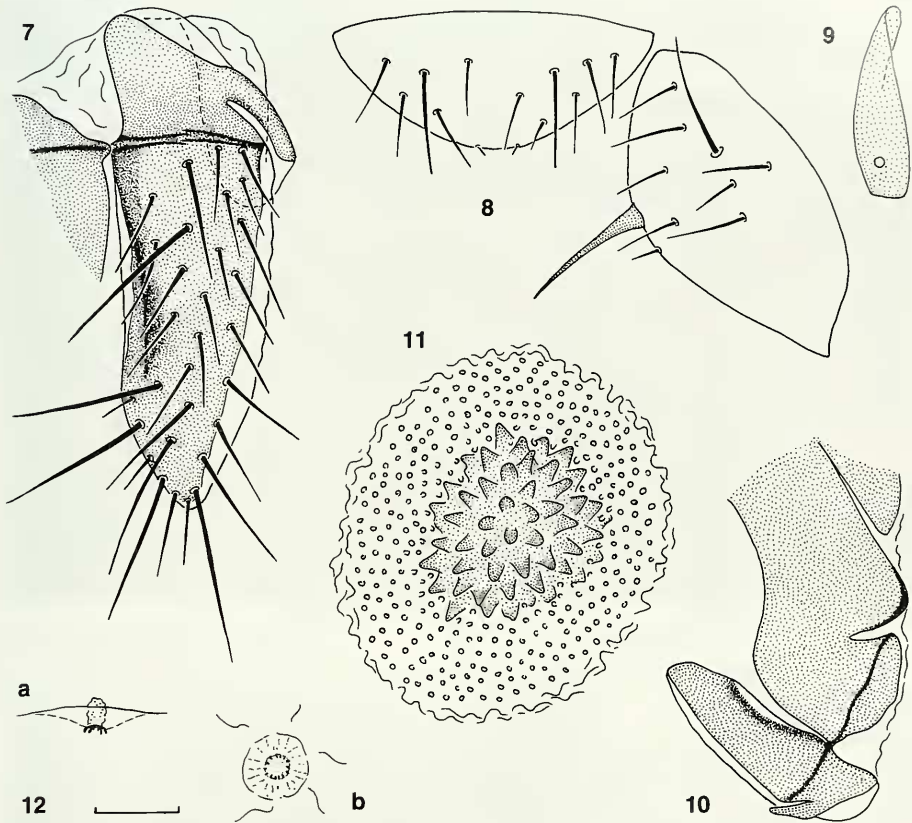
Biology. The spermatheca of the only female dissected (holotype) contains a spermatophore (sperm packet) full of sperm, therefore the species is bisexual. *H. abrupta* seems to be adapted to life in litter and upper layers of the soil. Sclerotization and compactness of the body (unusual in this family) probably offer an effective protection against dehydration during periods of drought. In the contracted condition of the body the hind margin of the sharp-edged head capsule fits to the metanotum and the prominent hind margin of the latter completely covers the membranous zone between thorax and abdomen. The biotope where the species was found



FIGS 1-6

Helenatropos abrupta gen. n., sp. n., female holotype: 1, habitus (pilosity not shown, except for lateral stout setae on metanotum) (scale: 0.5 mm); 2, pretarsal claw; 3, lacinial tip; 4, maxillary palpus (general pilosity and pigmentation not shown); 5, distal marginal sensilla of labrum; 6, metanotum (pigmentation not shown).

is characterized by Philip Ashmole as follows (in litt. 2004 and 2005): "A flat and stable open plain with compacted dust and small rocks, both embedded and on the surface. Vegetation: 80-90% cover. Plant ranking: 1 *Carpobrotus* (almost pure), 2 *Atriplex*. Rather few good retreats for invertebrates under rocks, but the creeper (*Carpobrotus*) plants provide good microhabitats. Human influence: disturbance not serious, though a good track passes close by. Although this site now has only prostrate vegetation, before the arrival of humans it is likely to have been covered by scrubwood scrub, with dominant scrubwood *Commidendrum rugosum* (Cronk, 1989; Ashmole & Ashmole, 2000). Slightly further inland on Horse Point, where deep soil was developed, there will have been a transition to dry gumwood woodland, with dominant *Commidendrum robustum*. It is possible that this woodland formed the original habitat for *Helenatropos abrupta*. Mature gumwood woodland no longer exists in the north of



FIGS 7-12

Helenatropos abrupta gen. n., sp. n., female holotype: 7, gonapophyses; 8, epiproct and right paraproct (pigmentation not shown); 9, spermapore sclerite; 10, clunium of right side with gonapophyses (schematic, pilosity not shown); 11, gland area of spermatheca (glandular plaque); 12, pores on membrane of spermathecal sac (scale: 0.01 mm): a, in profile view; b, in external view.

the island, but a fragment survives at Peak Dale in the south, and efforts to find *Helenatropos* there will be made during the coming year."

The photograph on Pl. 1A was taken a short distance to the west of the type locality of *H. abrupta*, it shows the presence of some plants of the introduced New Zealand Flax *Phormium tenax*, which was not present immediately around the trap site.

Discussion. Within the infraorder Atropetae (see Lienhard & Smithers, 2002) the new species has to be assigned to the Trogiidae on the basis of absence of scales, of pretarsal claw morphology (absence of preapical tooth, presence of a distinctly enlarged pulvillus) and of some spermathecal characters (gland areas consisting of two plaques integrated into the wall of the spermathecal sac) (see family diagnoses of Lepidopsocidae, Psoquillidae and Trogiidae in Lienhard, 1998). All known trogiids have greatly reduced veinless fore wings or are completely apterous; hind wings are



always absent and the metanotum is simple, though sometimes wider than the mesonotum. In trogiids the head capsule is always regularly rounded on the hind margin of the vertex, with a short and convex occipital region, and all tibiae bear some conspicuous external macrosetae. *H. abrupta* is characterized by the strongly sclerotized body, the sharp-edged vertex, the medially subdivided, prominent metanotum and the absence of tibial macrosetae. In addition, the external valvulae of the gonapophyses are unusually broad for a trogiid. A sclerotized ridge present between the basal and apical parts of the gonapophyses, and extending on the clunium has never been observed in any other trogiid. This set of autapomorphies justifies the introduction of a new genus though it is at present impossible to analyse its phylogenetic relationships in detail. Future discovery of the male of *H. abrupta* could possibly give more information about its position within the Trogiidae.

Probably most of the above mentioned autapomorphies of the new genus are related to its adaptation to hemiedaphic life (see "Biology"). *H. abrupta* apparently is endemic to St Helena island. However, soil-dwelling psocids of the African continent are rather poorly investigated, so it is likely that similar, still undiscovered forms exist there. These could represent a more or less recent source of colonization for St Helena island, which is not much more than 14 million years old (Baker, 1970; Lienhard & Ashmole, 1999; Ashmole & Ashmole, 2000).

PACHYTROCTIDAE

Key to the subfamilies of Pachytroctidae

- 1 Apterous morph (winged morph not known): anterior part of mesonotum developed as a weakly sclerotized intertergite between pronotum and mesonotum, bearing several setae, separated from main part of mesonotum by a membranous zone (Figs 14, 21); compound eye strongly reduced, with only 2 ommatidia (Fig. 13); distal inner margin of labrum with 3 placoid sensilla, no trichoids between them (Fig. 15); male clunium simple, lacking slender processes protruding over epiproct (female unknown) THORACOTROCTINAE **subfam. n.**
(only one genus: *Thoracotroctes* gen. n.)
- Apterous (♂, ♀) and winged morphs (♀): no intertergite present between pronotum and mesonotum, i.e. anterior part of mesonotum not separated from its main part, only with one pair of short hairs (Figs 22, 23); compound eye with numerous ommatidia; distal inner margin of labrum with 3 placoid sensilla and a pair of trichoids between them (cf. Badonnel, 1977: fig. 8) 2

PLATE 1

A (above): St Helena island, Horse Point Plain, near type locality of *Helenatropos abrupta* gen. n., sp. n., with Flagstaff Hill and Knotty Ridge in the background (photograph by P. Ashmole). B (below), Southern Madagascar, Didiereaceae stand between Tolanaro and Amboasary, type locality of *Thoracotroctes spinifer* gen. n., sp. n., with its collector (photograph by C. Lienhard).

- 2 Female subgenital plate lacking T-shaped sclerite; male clunium simple, lacking slender processes protruding over epiproct PACHYTROCTINAE (known genera, cf. Lienhard & Smithers, 2002: *Antilopsocus* Gurney, 1965; *Leptotroctes* Badonnel, 1973; *Nymphotroctes* Badonnel, 1931; *Pachytroctes* Enderlein, 1905; *Peritroctes* Ribaga, 1911; *Psacadium* Enderlein, 1908; *Psyllotroctes* Roesler, 1940)
- Female subgenital plate with T-shaped sclerite; male clunium with two slender processes protruding over epiproct (see Lienhard, 1998: fig. 55h, e) TAPINELLINAE (known genera, cf. Lienhard & Smithers, 2002: *Nanopsocus* Pearman, 1928; *Psylloneura* Enderlein, 1903; *Tapinella* Enderlein, 1908)

***Thoracotroctes* gen. n.**

Type species. Thoracotroctes spinifer sp. n.

Etymology. The genus name is a compound noun referring to the very particular thoracic morphology and to the genus name *Troctes* Burmeister, which forms also the second half of the name of the type genus of the family, *Pachytroctes* Enderlein. The new name is masculine in gender.

Description. Minute and completely apterous but body heavily sclerotized and dorsally with spiny cuticular sculpture (Fig. 13). Compound eyes strongly reduced, with only 2 ommatidia (Fig. 13). Ocelli absent. Antennal flagella broken off in all specimens examined. P4 with several slender sensilla, one conical sensillum very conspicuous (Fig. 17). Lacinal apex with 5 denticles, outer tine very long and subdivided apically (Fig. 18). Distal inner margin of labrum with 3 placoid sensilla, lacking the pair of trichoids usually present between them in Pachytroctidae (Fig. 15). Dorsal surface of head with heavy cuticular sculpture, consisting of big tubercles, these often papilla-like, much longer than wide, especially on lateral hind margin of vertex; many of the biggest tubercles with some longitudinal ribs and apical denticles, irregularly star-shaped in apical view (Fig. 13) and with denticulate apex in profile (cf. Fig. 14). Vertical suture well-developed, frontal suture not visible. Legs normally developed, femora not particularly enlarged, Pearman's organ of hind coxa not differentiated, tarsi 3-segmented, pretarsal claws lacking basal appendix and pulvillus, with a small preapical tooth and several short microtrichia on edge and on external surface (Fig. 16). Prothorax with a simple and heavily sclerotized notum bearing relatively short and apically much widened pectinate tubercles on anterior margin and very long papilla-like tubercles on hind margin, the latter similar to longest tubercles on the head (Figs 13, 14). Anterior part of mesonotum developed as a weakly sclerotized intertergite (Figs 14, 21) between pronotum and mesonotum, separated from pronotum and main part of mesonotum by a narrow membranous zone (membrane on hind margin of pronotum not visible in Fig. 14); this intertergite subdivided into a transverse median part, bearing 5 setae, and two small rounded lateral lobes, each bearing one seta; medio-anteriorly of the lateral lobe a small and slender sclerite present separating the central part of the intertergite from its lateral part (Figs 14, 21). Main part of mesonotum subtriangular, anteriorly with two prominent knob-like lateral lobes; cuticular sculpture of mesonotum similar to that of pronotum (Figs 13, 14). Metanotum wider

than pro- and mesonotum, laterally with a large prominent lobe, medially separated into two halves by a narrow hyaline membrane; cuticular sculpture of metanotum similar to that of mesonotum (Figs 13, 14), same sculpture also present on the ventrally folded lateral parts forming the underside of the prominent lateral lobes (Fig. 21). First abdominal tergite completely reduced; the other abdominal tergites forming a sclerotized dorsal shield, its segment borders dorsally only visible from tergites 2 to 5, marked by very narrow membranous zones. Spiracles well-developed on abdominal segments 3 to 8 (as usual in Psocoptera, cf. Badonnel, 1986: 698 and Lienhard, 1998: 20), spiracles 3 to 7 situated on well-separated pleural sclerites (Fig. 13). Cuticular sculpture on abdominal tergites with smaller tubercles than on head and thorax, in posterior half mostly forming a somewhat scale-like pattern (Fig. 13). Abdominal sternites and simple hypandrium together forming a compact sclerotized ventral shield, only some traces of segmentation visible in basal half. Clunium simple, lacking slender processes protruding over epiproct; epiproct and paraprocts simple. Phallosome elongated, weakly sclerotized; basal struts long, slender and basally not fused; apical part of phallosome with a pair of slender, apically curved, pointed parameres and a rectangular central lobe; distal angles of the latter bearing 3 small denticles and 2 pores (Figs 19, 20); eversible endophallus with a pair of rounded membranous lobes and a slightly sclerotized circular zone situated near apex in everted position (Fig. 20). Female not known.

Discussion. See discussion of the type species.

***Thoracotroctes spinifer* sp. n.**

Figs 13-21

Type material. Holotype ♂ (MHNG, slide n° 7647). MADAGASCAR: Province Toliara [Tulear], district Tolanaro [Fort-Dauphin], 45 km from Tolanaro (road to Amboasary), open Didiereaceae forest, soil sample (Berlese extraction), alt. 60 m, 4.XII.1989, leg. B. Hauser (sample Mad-89/43) (see Pl. 1B).

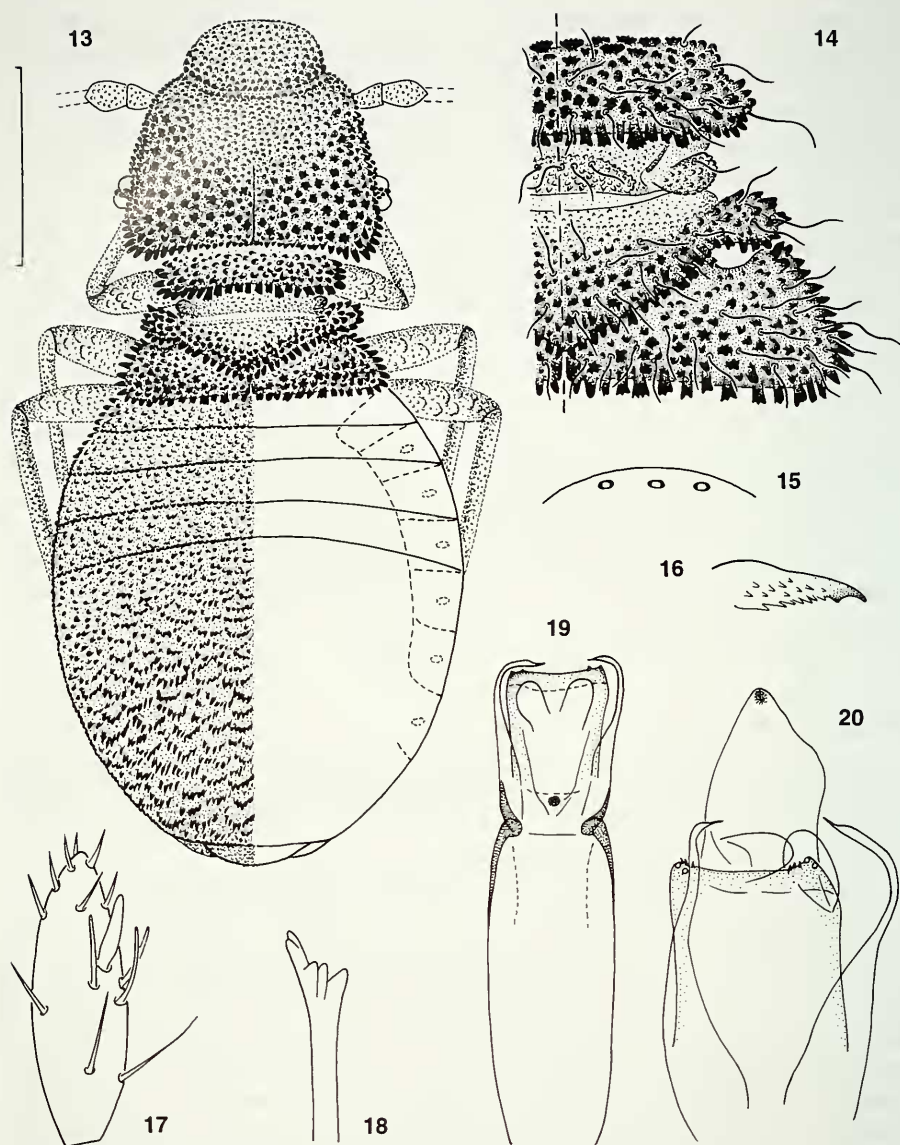
Paratype: 1 ♂ (MHNG, slide n° 7649), same data as for the holotype.

Etymology. The Latin adjective “spinifer, -a, -um” (= carrying spines) refers to the spiny cuticular sculpture of this species.

Description. See generic description, with the following additions. Body dark amber to medium brown, dorsal side with dense and relatively long pilosity, most of the hairs distinctly wavy (Fig. 14). Pilosity of ventral side shorter and hairs mostly not wavy. Head capsule between eye and antennal socket with a shallow groove bearing a relatively weak cuticular sculpture (in resting position scape and pedicel of the antenna probably fitting into this groove). Antennal flagella broken off in all specimens examined; scape and pedicel well-developed, as usual in apterous pachytroctids. All tibiae with 2 stout apical setae.

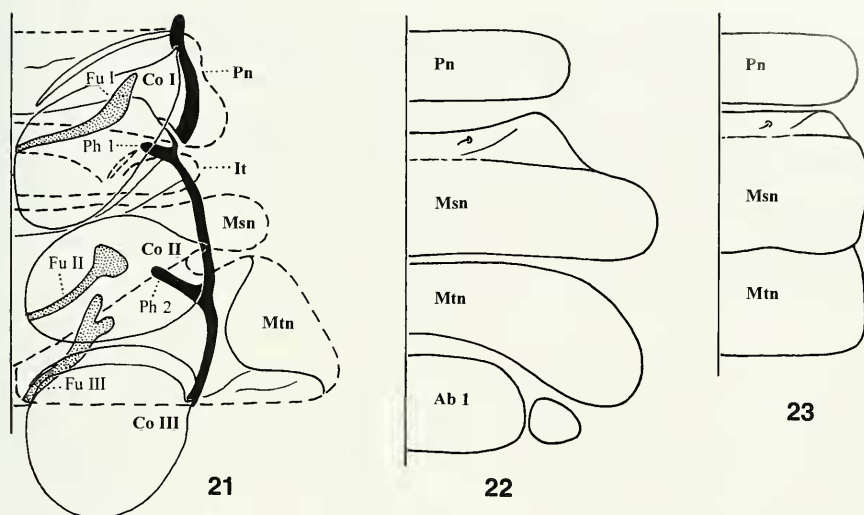
Measurements (μm , holotype ♂). BL = 840 (slide-mounted); F = 163; T = 240; t1 = 50; t2 = 30; t3 = 40.

Biology. The specimens were extracted from a soil sample (leaf litter and humus) collected in a typical stand of endemic Didiereaceae in the southernmost part of Madagascar. The photograph of the biotope (Pl. 1B) shows the moment where the collector is approaching the stand of tall spiny Didiereaceae (probably belonging to the genus *Alluaudia*) where the sample was taken. *T. spinifer* is apparently adapted to



FIGS 13-20

Thoracotroctes spinifer gen. n., sp. n., male: 13, habitus of slide-mounted holotype in dorsal view, cuticular sculpture not shown in right half of abdomen, ventral abdominal structures represented by broken lines (pilosity not shown, antennal flagella broken off) (scale: 0.2 mm); 14, right half of thorax in dorsal view, paratype (midline indicated by a broken line); 15, distal marginal sensilla of labrum; 16, pretarsal claw in external view; 17, apical segment of maxillary palpus, P4 (pigmentation not shown); 18, lacinial tip; 19, phallosome of holotype (specimen slide-mounted but not dissected, endophallus not everted); 20, apical part of phallosome with everted endophallus, dissected paratype (slightly deformed by slide-mounting).



FIGS 21-23

21, *Thoracotroctes spinifer* gen. n., sp. n., male paratype, left half of thorax in ventral view (schematic, same specimen as Fig. 14), dorsal structures indicated by broken lines, ventral and internal structures by continuous lines, furcae dotted, lateral wall and phragmata black. 22, *Nymphotroctes denisi* Badonnel (Pachytroctinae), apterous female (from Israel, MHNG), right half of thorax and first abdominal tergite in dorsal view (schematic). 23, *Nanopsocus oceanicus* Pearman (Tapinellinae), apterous female (from La Réunion, MHNG), right half of thorax in dorsal view (schematic). - Abbreviations: Ab 1 = first abdominal tergite; Co I-III = coxa of first, second, third pair of legs; Fu I-III = furca of first, second, third thoracic segment; It = intertergite; Msn = mesonotum; Mtn = Metanotum; Ph 1 = first thoracic phragma; Ph 2 = second thoracic phragma; Pn = Pronotum.

hemiedaphic life under climatic conditions in which humid and dry phases alternate. The heavy sclerotization of its body together with the spiny cuticular sculpture probably offer an effective protection against dehydration during periods of drought.

Discussion. Within the infraorder Nanopsocetae (see Lienhard & Smithers, 2002) the new species has to be assigned to the Pachytroctidae on the basis of the simple pronotum, the weakly enlarged hind femora, the body not dorso-ventrally flattened, the presence of narrow thoracic sterna, the separation of meso- and metanotum in the apterous morph and the morphology of the phallosome (basal struts basally not convergent to form an acuminate phallobase) (see family diagnoses of Liposcelididae, Sphaeropsocidae and Pachytroctidae in Lienhard, 1998). The present family assignment is well-supported by the above mentioned characters although wing characters are not known due to the absence of winged specimens in the material examined. Within pachytroctids *T. spinifer* is characterized by the characters mentioned in the subfamily key (see above), by the extremely developed spiny cuticular sculpture (unique in Psocoptera) and by the structure of the phallosome, which is very elongated and basally open (much shorter and usually basally closed in other pachytroctids) and bears a characteristic rectangular medio-apical lobe not known from

other members of the family. Another particular character of *T. spinifer* is the complete reduction of the first abdominal tergite. In other pachytroctids (winged and apterous morphs) this tergite is generally visible though narrow and weakly sclerotized. In *Nymphotroctes denisi* Badonnel (Fig. 22), a pachytroctid with laterally prominent meso- and metanotum and pronounced cuticular sculpture, this tergite is well-developed (a broad median sclerite and a pair of small lateral sclerites) and bears the same sculpture as the thoracic nota. It is noteworthy that in *T. spinifer* the first abdominal tergite is completely absent in spite of its superficial similarity with *N. denisi* concerning structure of thoracic nota.

The amount of differences between the new species and all other known pachytroctids does not only justify the introduction of a new genus but also of a new subfamily, Thoracotroctinae subfam. n. (see key of pachytroctid subfamilies). The most striking diagnostic character of this subfamily, the presence of an intercalary tergal sclerite between pro- and mesonotum (unique in Psocoptera), merits some additional comments. This intercalary structure (see Fig. 14) is separated from pronotum and from the main part of the mesonotum by a narrow membranous zone (membrane on hind margin of pronotum not visible in Fig. 14). As shown in Fig. 21 the intercalary tergite is situated just behind the first thoracic phragma (Ph 1) and undoubtedly belongs to the mesothorax. In the other winged or apterous pachytroctids the anterior part of the mesonotum is not separated from its main part and bears only one pair of small hairs (see Figs 22, 23). The presence of a narrow anterior part of the mesonotum separated from its main part by a membrane is considered as typical for Thysanoptera by Mickoleit (1961) (see also Matsuda, 1970, 1979), who calls this part "intertergite". In Thysanoptera this structure is a simple transverse sclerite, as I could observe it in some specimens of *Haplothrips cahirensis* (Trb.) from Niger (material in MHNG, det. R. zur Strassen). In *Thoracotroctes* however, the intertergite is distinctly subdivided into a transverse median part and a rounded lateral lobe on each side. The superficial similarity in thoracic morphology between Thysanoptera and *Thoracotroctes* is here interpreted as a convergence, possibly related to some biological adaptation in these minute insects.

T. spinifer is probably endemic to Madagascar. It is interesting to note that it has been discovered in one of the most particular vegetation types of this island, dominated by the endemic plant family Didiereaceae (see Pl. 1B). In this context it may be mentioned that also five new endemic oribatid mites have been described from the same sample, three of them only known from Didiereaceae stands in southern Madagascar (Mahunka, 1997).

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